

CLAIMS

1. An exposure apparatus including a main body of the exposure apparatus which exposes a pattern onto a substrate, the exposure apparatus being accommodated in a chamber, comprising:

a plurality of air-conditioning chambers which are formed by dividing said chamber; and

a pressure detection device which detects pressure information relating to said plurality of air-conditioning chambers.

2. An exposure apparatus according to claim 1, further comprising:

a pressure controlling device which adjusts pressure in each of said air-conditioning chambers, wherein

said pressure controlling device adjusts the pressure based on detection results from said pressure detection device so that a predetermined pressure difference is generated among each of said plurality of air-conditioning chambers.

3. An exposure apparatus according to claim 2, wherein:

said pressure controlling device performs said adjustment by controlling at least one of a gas supplying amount and a gas exhaust amount with respect to each of said air-conditioning chambers.

4. An exposure apparatus according to claim 3, further comprising:

a supply passage and an exhaust passage connected to each of said air-conditioning chambers, wherein

said pressure controlling device includes a passage opening rate adjusting unit

which is provided with at least one of the supply passage and the exhaust passage, and adjusts a gas flow rate by adjusting an opening rate of the passage.

5. An exposure apparatus according to claim 1, further comprising:
an exposure stage on which said substrate is mounted and subjected to an exposure process, wherein

one of said plurality of air-conditioning chambers is a column chamber which accommodates said exposure stage; and

said pressure controlling device adjusts a pressure of said column chamber so as to be higher than said plurality of air-conditioning chambers other than said column chamber.

6. An exposure apparatus according to claim 5, wherein said plurality of air-conditioning chambers other than said column chamber includes:

an exposure chamber which accommodates said main body of the exposure apparatus;

a mask transfer system accommodating chamber in which a mask transfer system is accommodated, said mask transfer system transferring a mask on which said pattern is formed into said main body of the exposure apparatus, and transferring the mask from said main body of the exposure apparatus; and

a substrate transfer system accommodating chamber in which a substrate transfer system is accommodated, said substrate transfer system transferring said substrate into said main body of the exposure apparatus, and transferring said substrate from said main body of the exposure apparatus; wherein

said pressure controlling device performs said adjustment so as to satisfy:

$$P_C \geq P_{WL} \geq P_B \geq P_{RL}$$

where P_C is a pressure of said column chamber, P_B is a pressure of said exposure chamber, P_{RL} is a pressure of said mask transfer system accommodating chamber, and P_{WL} is a pressure of said substrate transfer system accommodating chamber.

7. An exposure apparatus according to claim 6, wherein

$P_{RL} \geq P_{CR}$ is satisfied where P_{CR} is a pressure of a predetermined environment of the exposure apparatus.

8. An exposure apparatus including a main body of the exposure apparatus which exposes a pattern onto a substrate, the exposure apparatus being accommodated in a chamber, comprising:

a plurality of air-conditioning chambers which are formed by dividing said chamber; and

a pressure controlling device which adjusts pressure in each of said air-conditioning chambers, wherein

said plurality of air-conditioning chambers include:

a column chamber which accommodates an exposure stage on which said substrate is mounted and subjected to an exposure process;

an exposure chamber which accommodates said main body of the exposure apparatus;

a mask transfer system accommodating chamber in which a mask transfer system is accommodated, said mask transfer system transferring a mask on which said pattern is formed into said main body of the exposure apparatus, and transferring the mask from said main body of the exposure apparatus; and

a substrate transfer system accommodating chamber in which a substrate transfer

system is accommodated, said substrate transfer system transferring said substrate into said main body of the exposure apparatus, and transferring said substrate from said main body of the exposure apparatus; wherein

said pressure controlling device performs said adjustment so as to satisfy:

$$P_C \geq P_{WL} \geq P_B \geq P_{RL}$$

where P_C is a pressure of said column chamber, P_B is a pressure of said exposure chamber, P_{RL} is a pressure of said mask transfer system accommodating chamber, and P_{WL} is a pressure of said substrate transfer system accommodating chamber.

9. An exposure apparatus according to claim 8, wherein

$P_{RL} \geq P_{CR}$ is satisfied where P_{CR} is a pressure of a predetermined environment of the exposure apparatus.

10. An exposure apparatus according to claim 9, wherein

$P_{WL} \geq P_{CD}$ is satisfied where P_{CD} is a pressure of a substrate processing device which is in-line connected to the exposure apparatus.

11. An exposure apparatus which transfers a pattern of a first object onto a second object, comprising:

a first chamber in which at least said first object of a main body of the exposure apparatus which exposes said second object using an illumination beam via said first object is disposed;

a second chamber in which at least said second object of said main body of the exposure apparatus is disposed;

a third chamber in which a first transfer system is disposed which transfers said

first object to/from said first chamber;

a fourth chamber in which a second transfer system is disposed which transfers said second object to/from said second chamber; and

a gas supply device which supplies a gas to each of said first chamber, second chamber, third chamber, and fourth chamber, at least a temperature of said gas being controlled; wherein

pressure of each of said chambers is set so as to satisfy:

$$P_C \geq P_{WL} \geq P_B \geq P_{RL}$$

where P_B is a pressure of said first chamber, P_C is a pressure of said second chamber, P_{RL} is a pressure of said third chamber, and P_{WL} is a pressure of said fourth chamber.

12. An exposure apparatus according to claim 11, wherein

the pressure of each of said chambers is set to be about the same or higher than a pressure P_{CR} of a predetermined environment of the exposure apparatus.

13. An exposure apparatus according to claim 12, wherein

the pressure of each of said chambers is set to be higher than the pressure P_{CR} of the predetermined environment, and the pressure P_{RL} of said third chamber is set so that a difference in pressure with respect to the predetermined environment becomes about 0.5 [Pa] or greater.

14. An exposure apparatus according to claim 13, wherein

the pressure P_C of said second chamber is set so that a difference in pressure with respect to the predetermined environment becomes about 1.5 [Pa] or smaller.

15. An exposure apparatus according to any one of claims 11-14, wherein
the pressure P_{WL} of said fourth chamber is set to be about the same or higher than a pressure P_{CD} of a substrate processing device which is in-line connected to the exposure apparatus.
16. An exposure apparatus according to claim 15, wherein
the pressure P_{WL} of said fourth chamber is set to be higher than the pressure P_{CD} of said substrate processing device and lower than the pressure P_C of said second chamber.
17. An exposure apparatus according to claim 16, wherein
the pressure P_{WL} of said fourth chamber is set to be higher than the pressures P_B and P_{RL} of said first and third chambers, respectively.
18. An exposure apparatus according to claim 15, further comprising:
a pressure detection device which detects pressure information relating to at least one of said first, second, third, and fourth chambers.
19. An exposure apparatus according to any one of claims 11-14, wherein
the pressure P_{WL} of said fourth chamber is set to be higher than the pressures P_B and P_{RL} of said first and third chambers, respectively.
20. An exposure apparatus according to claim 19, wherein
the pressure P_C of said second chamber is set to be higher than the pressure P_{WL} of said fourth chamber.

21. An exposure apparatus according to claim 19, further comprising:
a pressure detection device which detects pressure information relating to at least one of said first, second, third, and fourth chambers.
22. A device manufacturing method, comprising the step of transferring a pattern onto a photosensitive object using an exposure apparatus according to any one of claims 1-14.